severe injury, such as bruising by excessive pressing, or even in hysteria pulling the child to pieces in their effort to get it out.[66]

Secondly, a midwife offered success, not only as proof of competence, but as a substantive asset. It will be remembered that the initial shape of an event set the invariable pattern for its subsequent occurrences. Thus a parturient was virtually certain of successful childbirth if she called on a person who had the habit (khōei) of success. It could not turn out otherwise. We have also seen that these successful midwives were good nourishers (liang dī). A new mother wanted to associate herself with such a fortunate sequence. Once established, a midwife's reputation was not unduly tarnished by the loss occasionally of a mother or baby. She might explain, "The woman did not do as I said," or "I was not given permission to do what I could have done, for her family feared she would be even more hurt by my putting my hand into the vagina." Death was, of course, only due to the running-out of the deceased's merit.

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66. To give something of the measure of their skill: if the feet of the baby appeared first, one man "straightened the legs by hand inside, held the chin carefully as the head came through," while another said, "Do not press or reach into the vagina. Let the baby come naturally." If an arm came first, or it were a breech presentation ("the baby is turned over"), the procedure was to "pull and press lightly," but it was conceded that neither the mother nor child could be saved. Expulsion of the placenta was frequently difficult. "It may take 2 hours or stay in 2 days or more. Some die when it is left in, but some do not." The technique of removal was to give a medicine, press, pull with the hands rubbed with alum for a better grip, with the woman in a crawling position. Some reached into the vagina to locate it. One woman had analyzed her practice so as to know when to expect trouble: namely, in the later pregnancies and childbirths, i.e. the sixth and seventh, say, rather than in the early ones during a woman's younger years.

As to mortality, one "professional" man estimated 30 deaths of babies out of 238 deliveries in 50 years. Hauck (1956) reported 90.6% live births (pp. 32-33), 7% of the babies dying in the first month, 11% within the first year (pp. 39-41). One should remember that the professionals had a greater proportion of difficult cases. One woman had delivered over 100 babies and "all lived."

853 fish and vegetables, when asked if they did anything to stimulate milk secretion. Other preparations, each mentioned once or twice, were cobra curry, fried (3)kuj (1)chnaj flower, pork soup with (3)kuj (1)chnaj leaves, dried peas and peppers cooked in palm sugar syrup. Some of the medications used were reputed to stimulate milk flow. Three women spoke of peacock brand medicine and one of a Chinese medicine in this connection. With respect to the Chinese medicine, another informant said she took it "to remove the serum which interferes with milk secretion." One midwife put herbs on her daughter's breast and expressed and discarded the "early milk" which was considered bad for the baby. No association appeared to be made between putting the baby to the breast and stimulation of milk flow.

846 312 Drinking water. - Information concerning sources of drinking water used by the mothers was obtained from 46 mothers of young babies. Of these, 20 used canal water, 23 rain water, and 3 used either one. In general, there was a relation between season and source of water used. Most of the mothers whose babies were born between March and October drank rain water, whereas from November to February a majority drank canal water. Some families had enough water jars to preserve rain water for much of the dry season, whereas others had few or no jars and, therefore, could save only small amounts of rain water on a day-to-day basis. In all instances, the water, whatever its source, was boiled for the mother during the postpartum rest period. Forty-six women said they drank the water hot; one said it was warm. One popular traditional midwife said, however, that if the mother had her baby in the hospital, use of boiled water for drinking and bathing was not necessary.

CONDITION AND CARE OF BABIES AT BIRTH AND IN EARLY INFANCY

125 All information to be reported concerning condition and care of babies at birth and in early infancy relates to infants who were under one year of age when first visited. Thirty infants were seen when they were under 3 months of age.

Condition at Birth.

164 165 The condition of the baby at birth was generally described as satisfactory. One infant who died on the third day, before we saw the mother, was said to have cyanosis, failed to cry at birth, and needed to be "helped" for about one-half hour afterward. Three infants had congenital defects: umbilical hernia, inguinal hernia on the right side, and hemangioma on the right groin.

One infant had congenital stridor when seen by the physician[1] at 2 months, but the difficulty in breathing had disappeared spontaneously before the baby was next visited at 3 1/2 months of age. 164

Illness in Early Infancy.

One infant that died on the fifth day was seen when one day old, at which time neither mother nor physician made any adverse comment on its condition. The mother, who was not living with her husband, returned to her work outside the village a week after delivery, and we were unable to talk with her again. So far as we could learn from neighbors, this infant had none of the symptoms concerning which we routinely inquired; namely, convulsions, vomiting, diarrhea, or fever. 165

A third infant in this series died when he was nearly 2 months old. At 13 days of age, when first seen, this infant had white patches on his tongue which were diagnosed as moniliasis. When the physician saw the child again at 6 weeks of age he made no adverse comments on its condition. Emotional reaction to the infant's death was such that we were unable to get a clear description of events which led up to it from either parents or neighbors.[2]

Three infants had skin infections when seen within a few days after birth. The physician commented that skin was more susceptible to infection when moist than dry and that the babies had become very warm. The weather was hot, and babies were bundled up and/or were near the fire. He gave directions for keeping the skin clean and dusting with sulfa powder. 164

No deaths from tetanus occurred in this series, although infantile tetanus was prominent among causes of death of infants under one month old (Hauck, 1956). 165 164

Medicine Given to Babies During the First Few Days of Life.

On this point, information was obtained concerning 36 of 40 babies seen before they were 6 months old. Thirty of these were given medicine, sometimes more than one kind. Most of the 854 278

1. A physician was present at all interviews with pregnant women and mothers with very young infants. [124]

2. Although the mother had children by a previous marriage, this was the first child of this union, born after the parents had lived together for 9 years. The mother was 41 years old.

clear evidence of a seasonal effect. If weight gain in Thai infants is related to season, this could be better defined by weighing groups of children at monthly intervals and determining when or if changes in rate of gain occur. 145

Although our records were not made for the purpose of correlating food intake with weight gain, and no quantitative information was obtained on the diets of mothers and babies, we attempted to see if any obvious relation existed between the variety of food eaten by the mother or the child and the child's growth. For this purpose, case studies were made of 7 infants whose records from birth onward were fairly complete. The age at last observation was from about 14 to 18 months. Four of these children had gained at each weighing and weighed more at one year of age than the average infant observed by Dr. Montri (1939). Three were chosen because they had lost weight or failed to gain at some time during the period of observation and weighed less at one year of age than the average infant observed by Dr. Montri. Infants of both sexes were included in each group. No illnesses or abnormalities were recorded in the clinical histories of any of these babies or their mothers. No evidence was obtained from the qualitative food records as to why some infants gained consistently and at a fairly "normal" rate, whereas others gained relatively slowly and failed to gain or lost weight at times (Smith, 1958). 145 262 [125]

Quantitative food records might have provided evidence on this point but our observations were inadequate for this purpose. Such quantitative records should include estimations of the amount of mother's milk obtained by the infants, based on the baby's weight before and after nursing, as well as records of supplementary food given. Analysis of the mother's milk, particularly for the content of the water soluble vitamins which are influenced by the mother's diet, should also help to shed light on the cause or causes of the common failure to gain weight among older infants and small children in Bang Chan. No cases of beriberi occurred among the infants we observed, but in two instances siblings had died of infantile beriberi. [164] [165]

Evidence of protein malnutrition has not been commonly recognized in rice eating areas, but one must consider the possibility that these children may be in a state analagous to pre-kwashiorkor. Development of the clinically recognizable protein deficiency disease may be forestalled when the child learned to feed himself and eats more liberally of rice with some fish and egg. Of the 54 children with kwashiorkor observed by Metrasiri and Metrasiri (1955) in Bangkok, many were weaned earlier than was usual in Bang Chan. Most of them, however, had been breast fed, and 4 were still being breast fed when the disease was diagnosed. 121 [862] [171]

BANG CHAN

164 among children in Bang Chan is not known. One thing which
[146] residents of Bang Chan appeared to have in common with other populations which have been reported to be relatively caries free, was low intake of sugar, particularly in a form which would be apt to adhere to the teeth.

Adults up to 44 years of age, in the random sample, retained most of their teeth. A few adults in Bang Chan have
[301] had missing teeth crowned. More sound than missing teeth were found to be crowned, however, i.e. in this community a crowned tooth appears to have cosmetic value.

759 A variety of serious illnesses were found to occur among
[164] residents of Bang Chan. As a rule, local traditional practitioners were consulted first, but most persons reported to have been seriously ill eventually received treatment by outside practitioners with some training in modern medicine.

[844] The majority of mothers in childbirth were attended by
[743] local traditional midwives, but a few difficult cases were taken to the government Health Center in the nearby town of Minburi, where a trained midwife was in attendance.

• 165 Of 438 pregnancies reported by 84 mothers, over 90%
[163] resulted in live births. Of the 397 living children born to these women, 81% survived at the time of interview. Within the first month of life, 7% had died, and a total of 11% died within the first year. Tetanus was prominent among causes of death of infants under one month of age. Infantile beriberi caused some deaths among older infants. In a majority of cases, the cause of death of infants could not be clearly identified, but fever, debility and convulsions were the symptoms most commonly described.

146 Almost half of the persons examined for possible signs of nutritional deficiency, 46% of the school children and 47% of the family sample, were free of such signs. The remainder, slightly more than one half of persons examined, had from 1 to 7 signs each. In general, more of the children and adolescents than the adults were free of possible signs of malnutrition, and the larger percentages of persons with 2 or more signs were in the groups of older persons examined. Signs most often noted, namely changes in tongue, lips, skin and hair, and absence of knee and ankle jerk, might reasonably be associated with apparent deficiencies of riboflavin, vitamin A and thiamine
[164] in the diet. The only clearly defined deficiency disease observed among residents of Bang Chan during the field study was beriberi.

14 Hemoglobin values of 11.5 g or less per 100 ml. were

BANG CHAN

164 malunion of old fractures was observed in two cases.

165 12 Deaths. - Information concerning deaths in Bang Chan during the period of the field study was obtained primarily from field notes. Mothers interviewed or examined by members of the research group which was specifically concerned with health and diet provided further information on infant mortality, and Ralis (1955) obtained some information concerning deaths of children in the respondent's family.

165 Deaths occurring while the field study was in progress. - During approximately 21 months of field study, members of the research group noted 14 deaths in the village. Three infants died, two within a few days of birth, and one at about two months of age. Two children died by accident, one as the result of a fall from a water buffalo, and the other by drowning. One child died of diphtheria and one of Hodgkin's disease. Of the seven adults who died during this period, one was a pregnant woman who became acutely ill and died while enroute to the Health Center at Minburi by boat. The cause of her illness was not known. One young man committed suicide, two adults died of tuberculosis, two of cancer, and one of colitis. One of those who died of tuberculosis was a young woman, the mother of seven children. She was urged by the physician on the team to go to the hospital in Bangkok, but she was unwilling. A sibling 8 years old, who lived in the same household, had died previously with a severe cough.

Mortality among infants and children. - Of the 397 living children born to 84 women interviewed, 323 or 81% of the children survived at the time of interview. Forty-three, or 11% had died within the first year, and 26 or 7% within the first month of life.

Although the data obtained by Ralis (1955) did not permit us to calculate the exact number of children born to the 335 household members interviewed, the number dead, and the number surviving at the time of interview, apparently more than twenty per cent of the children born into these families died (Appendix A). This estimate, for the village as a whole, tends to substantiate the figures obtained from the 84 mothers whom we interviewed.

Some information was obtained from 36 mothers concerning the cause of death of 58 children who were born alive. Twenty-one of these had lost one child only, 8 had lost 2 each, and 7 had lost 3 children each. Reported causes of death are summarized by ages, in Table 16.

In most cases, no specific cause could be assigned, and the case was classified according to the most prominent symptom as fever, convulsions or digestive disturbance.

A [see p.51-Analyst] B [see p.40-Analyst]

BANG CHAN

Table 16

Reported Causes of Death of 58 Infants and Children in Bang Chan. (Information obtained from parents.)

	Number of children dying at each age			
	Under 1 month	1 month to 1 year	1-5 years	5-10 years
Cause of death:				
Tetanus	8			
Probably tetanus	4			
Infantile beriberi		2		
Convulsions, cause unknown	1	4	2	
Fever	6	7	4	
Debility	4	2		
Digestive disturbance		2	2	
Sepsis	1		1	
Drowning				3
Diphtheria			1	
Other	2			2*
Total	26	17	10	6

*one with severe cough (tuberculosis ?)

BANG CHAN

• 45 Deaths of infants a few days old, with a description of lockjaw, inability to suck, stiff back and clenched hands, were recognized as due to tetanus. The common practice of native midwives is to place the cord over a hard rhizome or clod of earth and to cut it with a tapered piece of bamboo. Thus, infection with the tetanus organism may occur from contact with the soil. Note that 12 of 26 deaths reported for infants under 1 month, were diagnosed as tetanus or probably tetanus. Zimmerman (1931) summarized important causes of death in Siam, based on the physician's diagnosis made after symptoms were described by the head of the household. Of 1800 deaths which occurred in the 18 months preceding the survey, 2% were diagnosed as tetanus. For the Central area, 3.8% of 495 deaths were from tetanus. Most, if not all of the cases of infantile tetanus could be prevented if native midwives learned to avoid contact of the cord with earth or a soil-coated rhizome. By using sterile scissors for cutting the cord instead of tapered bamboo which must be pressed against another surface to accomplish the cutting, contact with soil could be avoided. Of 335 household heads interviewed, 220 owned scissors of some kind (Ralis, 1955).

Infants several months old, who had some of the symptoms of infantile beriberi, as convulsions and almost voiceless crying, were considered as cases of infantile beriberi only if the mother had symptoms of beriberi, such as numbness or tingling in the extremities, or difficulty in walking, at the time. One mother had lost 3 infants at 3 or 4 months of age, with similar symptoms, but described the symptoms of beriberi in herself at the time of the death of the last baby only. The other two cases were therefore listed as convulsions, cause unknown. The occurrence of infantile beriberi reflects the unsatisfactory nutriture of the mother, whose milk is therefore low in thiamine content. To prevent deaths from infantile beriberi, the general level of nutrition in the village, and particularly the food habits of pregnant and nursing women, should be improved.

Note also the number of deaths from "debility." As the Joint FAO/WHO Expert Committee on Nutrition (1951) has pointed out, the number of early deaths from "congenital debility" becomes insignificant where the health and nutritional status of pregnant women approaches the optimal.

Intestinal Parasitism and Bowel Habits

126 Intestinal Parasitism. - All school children were pro-
125 vided with tin containers labelled with their names, and asked
164 to bring a stool sample to school. Fourth grade children whose first stool samples were negative, were asked to bring a second specimen. Parasites were found in some of these second

k9

27.a. Excuse me, but at present do you have a (wife/husband) who lives and eats with you, or not? [125] [592]

1. Yes	255
2. Yes, qualified _____	6
3. No	72

b. IF NO: Excuse me, but is this because you are widowed, separated, divorced, or is there some other reason? [589] [586]

4. Widowed	45
5. Separated	9
6. Divorced	1
7. Other, specify	10
— No Answer	7

28.a. Your own children, all of them that have ever been born, how many are there? [592] [162]

8. None	24
9. One	32
X. 2 to 3	70
Y. 4 to 5	74
0. 6 or more	133

b. How many of your children are still living?

0. None	29
1. One	40
2. 2 to 3	83
3. 4 to 5	82
4. 6 or more	97
— No Answer	2

c. How many of your children have died? [165]

0. None	198
1. One	44
2. 2 to 3	56
3. 4 to 5	17
4. 6 or more	9
— No Answer	9

29.a. Have you ever been ordained as a priest, or not? [793] [792]

1. Yes	187
2. No	31
— No Answer	2

[Male Buddhist (220)]

b. IF NO: In the future, do you want to be ordained as a priest, or not?

3. Yes	20
4. No	11

c. ASK ALL: How many sons do you have twenty years old or over? [593] [162]

5. None	176
6. One	56
7. Two	29
8. Three or more	19
— Unascertainable	13